

CLAIMS

1. A pilot signal detection circuit, comprising:
 - a first semiconductor switch for outputting by
5 selecting either a base-band signal or a predetermined voltage;
 - a detection circuit for detecting a signal output from the first semiconductor switch;
 - a smoothing circuit for smoothing an output signal
10 of the detection circuit;
 - a first differential amplifier circuit for differential-amplifying an output signal of the smoothing circuit;
 - a band gap reference voltage generation circuit
15 for generating a reference voltage;
 - a second semiconductor switch for outputting by selecting either the reference voltage output from the band gap reference voltage generation circuit or the predetermined voltage;
 - 20 a second differential amplifier circuit for differential-amplifying a signal output from the second semiconductor switch; and
 - an offset removal circuit for retaining outputs of the first and second differential amplifier circuits
25 as an offset cancellation voltage when the predetermined

voltage is selected by the first and second semiconductor switch, and removing an offset voltage included in a signal output from the first and second differential amplifier circuit based on the offset cancellation voltage.

2. A pilot signal detection circuit, comprising:
 - a first semiconductor switch for outputting by selecting either a base-band signal or a predetermined voltage;
 - a detection circuit for detecting a signal output from the first semiconductor switch;
 - a smoothing circuit for smoothing an output signal of the detection circuit;
 - a first differential amplifier circuit for differential-amplifying an output signal of the smoothing circuit;
 - a band gap reference voltage generation circuit for generating a reference voltage;
 - a second semiconductor switch for outputting by selecting either the reference voltage output from the band gap reference voltage generation circuit or the predetermined voltage;
 - a second differential amplifier circuit for differential-amplifying a signal output from the second

semiconductor switch;

a current-to-voltage conversion circuit for
converting an output current of the first differential
amplifier circuit and a output current of the second
5 differential amplifier circuit into respective
voltages; and

an offset removal circuit for retaining an output
voltage of the current-to-voltage conversion circuit
as an offset cancellation voltage when the predetermined
10 voltage is selected by the first and second semiconductor
switch and removing an offset voltage by feeding the
retained offset cancellation voltage back to an input
of the current-to-voltage conversion circuit.

15 3. The pilot signal detection circuit according to
claims 1 or 2, wherein

said smoothing circuit comprises a capacitor, and
a third semiconductor switch which becomes an
on-state when said first semiconductor switch selects
20 the base band signal for charging the capacitor with
an output voltage of the smoothing circuit, while becomes
an off-state when the first semiconductor switch selects
the predetermined voltage for retaining a voltage of
the capacitor.

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4. The pilot signal detection circuit according to claims 1 or 2, wherein

said band gap reference voltage generation circuit generates the reference voltage by using a bipolar transistor formed on a MOS integrated circuit board.

5. The pilot signal detection circuit according to claims 1 or 2, wherein

said offset removal circuit comprises:

10 a fourth semiconductor switch which becomes an on-state when said first semiconductor switch selects said predetermined voltage, otherwise becoming an off-state,

a capacitor for retaining output voltages of said first and second differential amplifier circuits or an output voltage of said current-to-voltage conversion circuit as an offset cancellation voltage, and

a third differential amplifier circuit for removing an offset voltage by feeding the offset cancellation voltage retained by the capacitor back to either the output of the first and second differential amplifier circuit or the input to the current-to-voltage conversion circuit.

25 6. The pilot signal detection circuit according to

claims 1 or 2, wherein

said detection circuit is a phase detection circuit for carrying out a phase detection of a pilot signal of a stereo complex signal.

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7. A semiconductor integrated circuit forming, on a semiconductor integrated circuit board by a MOS process, a pilot signal detection circuit which comprises:

10 a detection circuit for detecting a base band signal;

a smoothing circuit for smoothing an output signal of the detection circuit;

15 a first differential amplifier circuit for differential-amplifying an output signal of the smoothing circuit;

a band gap reference voltage generation circuit for generating a reference voltage;

a second differential amplifier circuit for differential-amplifying the reference voltage; and

20 an output circuit for outputting a signal of a sum of outputs of the first and second differential amplifier circuits as a signal for indicating whether or not a pilot signal level is equal to, or greater than, the reference voltage.

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8. A semiconductor integrated circuit, forming, on a semiconductor integrated circuit board by a MOS process, a pilot signal detection circuit which comprises:

5 a detection circuit for detecting a signal output from the first semiconductor switch;

a smoothing circuit for smoothing an output signal of the phase circuit;

10 a first differential amplifier circuit for differential-amplifying an output signal of the smoothing circuit;

a reference voltage generation circuit for generating a reference voltage;

15 a second semiconductor switch for outputting by selecting either the reference voltage output from the reference voltage generation circuit or the predetermined voltage;

a second differential amplifier circuit for differential-amplifying a signal output from the second semiconductor switch; and

20 an offset removal circuit for retaining outputs of the first and second differential amplifier circuits as an offset cancellation voltage when the predetermined voltage is selected by the first and second semiconductor switch, and removing an offset voltage included in a
25 signal output from the first and second differential

amplifier circuit based on the offset cancellation voltage.

9. The semiconductor integrated circuit according to
5 claim 8, wherein
said smoothing circuit comprises
a capacitor, and
a third semiconductor switch which becomes an
on-state when said first semiconductor switch selects
10 the base band signal for charging the capacitor with
the output voltage of the smoothing circuit, while
becomes an off-state when the first semiconductor switch
selects the predetermined voltage for retaining a voltage
of the capacitor.